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| 09/355,623      | 10/05/1999  | OLLI PIIRAINEN       | PM262375            | 6720             |

909 7590 07/09/2003  
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EXAMINER

TRAN, TUAN A

| ART UNIT | PAPER NUMBER |
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2682

DATE MAILED: 07/09/2003

18

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/355,623

Applicant(s)

PIIRAINEN, OLLI

Examiner

Tuan A Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 October 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-11, 13-15, 16-27 and 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott (6,094,421).

Regarding claim 1, Scott discloses a transmission method and apparatus used in a radio system that comprises at least one base station 304 (See fig. 3A) and a number of subscriber terminals 302 at least two of which transmit access bursts to one and the same base station, the access burst activating between a subscriber terminal and a base station a connection that is established by a signal that is of a certain frequency and is sent in timeslots, characterized in that when the subscriber terminal is commanded to send the base station a signal that employs a timeslot and frequency that used by another subscriber terminal, sending the subscriber terminal a command to adjust the transmission moment of signal so that the base station receives the transmitted signals at different moments within the same timeslot (See figs. 5A, 5C, 8A, 9, 10B and col. 3. lines 29-47, col. 4 lines 51-65, col. 9 lines 6-10, col. 12 lines 14-35, col. 23 line 30 to col. 26 line 8). However, Scott does not mention that the base station comprises a plurality of RF heads. Base station with multiple RF heads is well known in

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the art; therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ multiple RF heads to the base station of the radio system as disclosed by Scott for the advantage of enhancing signal quality as well as extending coverage of the base station to areas where signals are degraded due to terrain or obstacles such mountains, trees, buildings or walls.

Regarding claim 2, Scott further discloses the transmission moment is adjusted before an actual connection is established (See fig. 5B and col.11 lines 1-8, col. 12 lines 14-34).

Regarding claims 3-4, Scott further discloses the command is sent to delay or advance the transmission moment of the signal (See fig. 5B and col. 11 lines 1-8).

Regarding claims 5-6, Scott further discloses the command is sent to advance or delay the transmission moment at most an 11-bit period (See figs. 5B, 10A and col. 7 line 66 to col. 8 line 51, col.11 lines 51-67).

Regarding claim 7, Scott further discloses the transmission moment of the signal is adjusted by at most the tail bits at the beginning of the burst and the guard period at the end of the burst (See fig. 10A and col.7 line 66 to col. 8 line 51 and col. 11 lines 51-67).

Regarding claim 8, Scott further discloses the impulse responses are formed from the signals received by the base station being defined to have a length of a minimum of substantially 3 bits (See fig. 12A and col. 45 line 22 to col. 46 line 2).

Regarding claim 9, Scott further discloses at least two signals of the same frequency are separated from each other, the signals have been received by the base

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station from one and the same timeslot (See fig. 5A, 10B and col. 3 lines 29-47, col. 7 lines 39-52, col. 23 line 30 to col. 26 line 8).

Regarding claim 10, Scott further discloses the signals are separated by means of training sequences of signals received at different moments (See fig. 10B).

Regarding claim 11, Scott further discloses the signals received by the base station are correlated and on the basis of correlation, the signal with the best quality and for example the highest energy is selected, and the signal is then used as a connection-establishing signal (See col. 12 lines 14-24).

Regarding claim 13, Scott discloses as cited in claim 1. Since Scott further discloses the radio system may be used in conjunction with different communication techniques such as FDMA or PDMA (See col. 6 lines 41-53); therefore it would have been obvious to person skilled in the art to have the base station send a command to the subscriber to change the signal transmission frequency, if the signal transmitted by the subscriber terminal interferes with a signal transmitted by another subscriber terminal in order to enhance the QoS (quality of service).

Regarding claim 14, Scott further discloses the frequencies used in different signals are predetermined (See col. 7 line 24-52).

Regarding claim 15, Scott further discloses the signals are transmitted by the Time Division Multiple Access (TDMA) method (See fig. 5A and col. 8 lines 30-35).

Regarding claim 16, Scott discloses as cited in claim 1. Scott further discloses that the method is suited for cellular communication system utilized TDD/TDMA (See fig. 3A and col. 5 lines 24-30). However, Scott does not mention that the method is

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particularly suited for the radio system, for example, in offices. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a method as disclosed by Scott in the radio system in offices for the advantage of extending the application of the method into various environments.

Claims 17-27 and 29-33 are rejected for the same reasons as set forth in claim 1-11 and 13-16, as apparatus.

2. Claims 12 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott (6,094,421) in view of Bjork et al. (6,084,862).

Regarding claim 12, Scott discloses as cited in claim 1. However, Scott does not explicitly mention that the signals received by the base station are correlated by means of a training sequence, the signal formed on the basis of the correlation are placed in windows, and the summed energies of the impulse responses of the signals placed in the window are compared. Bjork discloses signals received by the base station are correlated by means of a training sequence, the signal formed on the basis of the correlation are placed in windows, and the summed energies of the impulse responses of the signals placed in the window are compared (See figs. 2, 8 and col. 3 lines 30-50, col. 5 line 48 to col. 6 line 13, col. 6 lines 45-56, col. 9 line 18 to col. 12 line 15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Bjork in the method and apparatus as disclosed by Scott for the advantage of making accurate measurements of time dispersion.

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Claim 28 is rejected for the same reasons as set forth in claim 12, as apparatus.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Manabe (5,423,067) discloses digital mobile communications system and method for providing intensity/coverage reference maps using base stations and mobile stations.
- Mouly et al. (4,866,788) discloses process for controlling retransmission messages from transmitting stations belonging a cellular system.
- Kay et al. (5,357,513) discloses transmission power level adjustment in radiotelephony.
- Uchida et al. (5,805,581) discloses mobile communication system using various multiple access methods.
- Howard Benn (GB 2308041) discloses radio communication system has centralized channel coding/decoding.

### ***Response to Arguments***

Applicant's arguments filed 02/24/2003 have been fully considered but they are not persuasive.

a. The Applicant argued that Scott fails to teach a method to adjust the transmission moments of the signals transmitted by user equipment so that the base station receives the signals transmitted from different user equipments at different

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moments in the same time slot at the same frequency (See Remark, pages 6-7). The Examiner respectfully disagrees with the Applicant arguments because: nowhere in the Specification or claims, the Applicant clearly defines the time slot; therefore time slot is considered as a time interval. In this case, Scott does teach a method to adjust the transmission moments of the signals transmitted by user equipment so that the base station receives the signals transmitted from different user equipments at different moments in a same frame (frame is also a time interval) at the same frequency (See above Rejection for more details). For that reasons, the Examiner remains the rejections for all pending claims.

b. The Applicant argued that the combined teachings of Scott and Bjork fail to teach the invention as cited in claims. The Examiner respectfully disagrees with the Applicant arguments because although Scott does not explicitly mention the signal correlating technique at the base station, but Bjork does. In this case, it would have been obvious to person skilled in the art to employ the Bjork's signal correlating technique at the Scott's base station in order to make accurate measurements of time dispersion; therefore Scott's reference in combined with Bjork's reference would arrive to the claimed subject matter.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Tuan Tran** whose telephone number is **(703) 605-4255**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Vivian Chin**, can be reached at **(703) 308-6739**.



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**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**


Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



Tuan Tran

AU 2682



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6/30/03